

AMENDMENTS TO THE CLAIMS:

Claims 1-30 (cancelled)

31. (Currently Amended) A semiconductor device ~~having an embedded interconnect structure of copper, copper alloy, silver or silver alloy interconnects, wherein a surface of an exposed interconnect is selectively covered with a protective film, said protective film being formed by performing an electroless-plating process with use of an electroless-plating liquid, comprising:~~

an interconnect made of copper, copper alloy, silver, or silver alloy, embedded in a trench in a surface of an insulating film, wherein said trench is covered by a barrier layer; and

a protective film having a thickness in a range of from 0.1 nm to 500 nm, said protective film selectively covering an exposed surface of said interconnect, and said protective film being formed by an electroless-plating process using an electroless-plating liquid without using palladium,said electroless-plating liquid comprising:

- (i) cobalt ions;
- (ii) a complexing agent; and
- (iii) ~~as a reducing agent,~~ an alkylamine borane that is free from alkali metal.

32. (Previously Added) The semiconductor device according to claim 31, wherein said electroless-plating liquid further comprises at least one of

- (i) a stabilizer selected from one or more kinds of heavy metal compounds and sulfur compounds, and
- (ii) a surfactant.

33. (Currently Amended) The semiconductor device according to claim 31, wherein said electroless-plating liquid has ~~a pH within a range of from 5 to 14~~ via a pH adjusting agent that is free from alkali metal.

34. (Currently Amended) A semiconductor device ~~having an embedded interconnect structure of copper, copper alloy, silver or silver alloy interconnects, wherein a surface of an exposed interconnect is selectively covered with a protective film, said protective film being formed by performing an electroless-plating process with use of an electroless-plating liquid, comprising:~~

an interconnect made of copper, copper alloy, silver, or silver alloy, embedded in a trench in a surface of an insulating film, wherein said trench is covered by a barrier layer; and

a protective film having a thickness in a range of from 0.1 nm to 500 nm, said protective film selectively covering an exposed surface of said interconnect, and said protective film being formed by an electroless-plating process using an electroless-plating liquid without using palladium, said electroless-plating liquid comprising:

- (i) cobalt ions;
- (ii) a complexing agent;
- (iii) a compound containing a refractory metal; and
- (iv) ~~as a reducing agent,~~ an alkylamine borane that is free from alkali metal.

35. (Previously Added) The semiconductor device according to claim 34, wherein said refractory compound comprises at least one of tungsten and molybdenum.

36. (Previously Added) The semiconductor device according to claim 34, wherein said electroless-plating liquid further comprises at least one of

- (i) a stabilizer selected from one or more kinds of heavy metal compounds and sulfur compounds, and
- (ii) a surfactant.

37. (Currently Amended) The semiconductor device according to claim 34, wherein said electroless-plating liquid has ~~a pH within a range of from 5 to 14 via~~ a pH adjusting agent that is free from alkali metal.

Claims 38-40 (Cancelled)

41. (New) The semiconductor device according to claim 31, wherein said protective film has a thickness within a range of from 10nm to 100nm.

42. (New) The semiconductor device according to claim 34, wherein said protective film has a thickness within a range of from 10nm to 100nm.

43. (New) A method of forming a semiconductor device, comprising:
providing a trench in a surface of an insulating film on a substrate, wherein said trench is covered by a barrier layer and a seed layer on said barrier layer;
depositing a metal film in said trench so as to form an embedded interconnect; and
while rotating said substrate, electrolessly plating a protective film having a thickness in a range of from 0.1 nm to 500 nm onto a surface of said embedded interconnect using an electroless-plating liquid without using palladium, said electroless-plating liquid comprising:

- (i) cobalt ions;
- (ii) a complexing agent; and
- (iii) an alkylamine borane that is free from alkali metal.

44. (New) The method according to claim 43, further comprising polishing a surface of said metal film before said electrolessly plating.

45. (New) The method according to claim 43, wherein said electroless-plating liquid further comprises at least one of

- (i) a stabilizer selected from one or more kinds of heavy metal compounds and sulfur compounds, and
- (ii) a surfactant.

46 (New) The method according to claim 43, wherein said electroless-plating liquid has a pH adjusting agent that is free from alkali metal.

47. (New) A method of forming a semiconductor device, comprising:
providing a trench in a surface of an insulating film on a substrate, wherein said trench is covered by a barrier layer and a seed layer on said barrier layer;
depositing a metal film in said trench so as to form an embedded interconnect; and
while rotating said substrate, electrolessly plating a protective film having a thickness in a range of from 0.1 nm to 500 nm onto a surface of said embedded interconnect using an electroless-plating liquid without using palladium, said electroless-plating liquid comprising:

- (i) cobalt ions;
- (ii) a complexing agent;
- (iii) a compound containing a refractory metal; and
- (iv) an alkylamine borane that is free from alkali metal.

48. (New) The method according to claim 47, further comprising polishing a surface of said metal film before said electrolessly plating.

49. (New) The method according to claim 47, wherein said refractory compound comprises at least one of tungsten and molybdenum.

50. (New) The method according to claim 47, wherein said electroless-plating liquid further comprises at least one of

- (i) a stabilizer selected from one or more kinds of heavy metal compounds and sulfur compounds, and
- (ii) a surfactant.

51. (New) The method according to claim 47, wherein said electroless-plating liquid has a pH adjusting agent that is free from alkali metal.

52. (New) The method according to claim 43, wherein said protective film has a thickness within a range of from 10nm to 100nm.

53. (New) The method according to claim 47, wherein said protective film has a thickness within a range of from 10nm to 100nm.